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T H E

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THE AGRICULTURAL ANT.*

BY DR. G. LINCECUM.



SINCE my return from Mexico, I have discovered several traits in the character of the *Myrmica molefaciens* that I had not noticed before. In fact, the circumstances that have developed the facts I am about to notice had not transpired.

In 1848, the year I came to Long Point, there was but one agricultural ant city within a mile of the place. This nest was situated in a nearly barren little spot on top of an elevation, underlaid with stratified sandstone. Here there was but little grass and weeds to interfere with their seed collecting labors. The ant rice which they so carefully cultivate was flourishing in a regular circle near the outer border, but inside of the pavement. There were little patches of the same grass scattered about on the little glade which had doubtless been planted there by some experienced ant, for it had been neatly cleared of all other vegetables, in fact cultivated by them.

The entire surrounding country consists of very rich black prairie soil, and was bearing a very heavy coat of cowfodder grasses. In this dense coat of grass the mound builder could not travel; but was content to confine himself to a single city in the open district, until a road that passed near the pavement had been tramped out through the deep grass. This occurred about two

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years after my first acquaintance with the above named city. It was interesting to observe how soon they availed themselves of the use of the clean hard-trodden road. They were seen running along in trains half a mile from their city, and it was not long before new cities were seen along the side of the road. The first one made its appearance about eighty yards from the old city and just far enough from the road to be out of the way of the passing teams.

These new cities, which, in the course of three years, made their appearance at intervals of about eighty yards along the side of the road for more than a mile, were never seen before; they were a year and a half old. One of their peculiarities is, that with bits of stick, little balls of soil and the like, they conceal the entrance of a new city until they consider themselves sufficiently strong to make their appearance and sustain themselves among the nests of other ants. They are then seen clearing out and paving a considerable circular space around the entrance to their city. Some old settlements have a pavement fifteen feet in diameter and a mound in the centre a foot high.

And now the increasing cattle made the grass thinner, and the ants swarming out spread their cities in all directions at short intervals (thirty yards is about the average) until the prairies are full of them.

They do not, like the bees, throw off colonies, to go out and build up a new kingdom. It is a very different process. On a certain day in summer all the males and females—they all fly—assemble, as if by appointment, from all the surrounding nests, at some suitable place; generally in the smooth road, where they seize each other, three or four males to one female and wallowing on the ground eagerly, give the idea of a battle; which the careless observer is sure to report as such. It is, however, no battle, but a rampant amative furor, which continues three or four hours, when the female becoming satisfied with her numerous, eager lovers, makes shift to tear herself loose from them and make her escape. At first she climbs up some little weed or spear of grass, and seems to rest for a few minutes, when she spreads her glassy wings for the last time, and flies with the wind until she is tired, or till some counter current casts her to the ground. She seems now in great haste, and running around, she soon selects a place, where she energetically goes to work digging a small hole, which, when

she has deepened sufficiently for her wings to prevent her free ingress, she deliberately withdraws and with her sharp mandibles clips them off. She now continues her labors until the hole is six or seven inches deep, and excavating a small cell at the bottom, she closes the passage above, and remains sleeping in her little cell nine or ten days. If she survives that long, she comes out, procures some food and goes to work, deposits twenty or thirty eggs, raises them to maturity;—they are all workers—and after this the queen or mother ant is seen outside no more. She conceals the entrance to her kingdom, keeps her workers busy, increases their number rapidly, and in the course of eighteen months, finding her armies sufficiently strong, she throws off all disguise and clearing a considerable space around the gate of the city commences to pave it and to build up a monument or pyramid. This last is a public work as well as the pavement, and it is carried on slowly by the police, who are always found on and around the environs of the city.

Thus have I partially described the origin and progress of a single successful mother ant of the mound building species. Were all that fly away from those astonishing connubial assemblies equally successful, it would require but very few years for them to overpeople the whole earth. But nature, as she has done in all other races of animal life, has made provisions for the destruction of the superfluous queens. Great numbers of them never return from the little cell they have prepared for themselves at the bottom of their new home. They die either from having packed the dirt in the hole above them, or from being found by the hunters or soldiers of the surrounding kingdoms, whose custom it is, whenever they discover one of these new beginnings for a city, invariably to dig out and assassinate the occupant. Many birds are fond of the females of this species of ant, devouring all they can find. There are many other causes for the failure of these fat queens which, according to my observations on the subject, result in the conclusion, that not exceeding one in a thousand of those beginning a nest survives and builds up a colony.

I have witnessed several of their grand connubial festivals. One I saw in 1858, that occupied a plat of ground 107 yards in length and ten yards wide. The ground was thickly strewn with them. When I first discovered them they were coming from every direction, and lighting down on the above described plat by

tens of thousands. It was a great day with the ants; and soon the place was so completely carpeted with them that it was impossible to walk among them and not crush them.

In the course of three hours the males began to show the dreadful effects of their dissolute course. They began rapidly to die. The females would wring themselves loose from the males and fly off, leaving them exhausted and struggling in death. They had fulfilled their mission, and the ground long before night was covered with their dead bodies.

I visited the place the next morning; the wind had driven them into the little gullies in the road, and there could not have been less than a bushel of them. Not a female dead or alive to be seen anywhere amongst them. But not far off, and in the direction the wind was blowing at the time they made their escape from their prostrate and dying lovers, could be seen countless numbers of little black piles of earth which had been thrown out of their holes during the night. There were fifteen to twenty of these new burrows to every square rod, and they were seen in that proportion for more than a mile. So it is plain, if there were no counteracting influences, to see that they would soon occupy every available space. Few of them, however, proved successful, for the whole prairie had already been fully stocked with them. Pavements were to be seen every thirty or forty yards, but too new to possess any mounds. Their pavements were flat when in 1868 I went away; and now I have got back in 1873 I find they have made great improvements; all have raised mounds, some of them quite large. The progress they have made on their mounds and pavements is very conspicuous.

This species of ant subsists almost entirely on small seeds, great quantities of which they store away in their granary-cells to supply food for winter. During rainy seasons in the autumnal months it happens right often that the ground becoming saturated, the water penetrates their granaries, and swells and sprouts their seeds. In this emergency they bring out the damaged grain the first fair day, and exposing it to the sun until near night, they take in all that is not actually sprouted. I saw them in G. W. Gentrey's farm one day have out on a flat rock as much as a gallon of wheat sunning. I wanted to see how they would manage to get so much back again, and returned again that evening just in time to see their hosts come out and carry it in in five minutes.

There are many other interesting achievements performed by this sagacious race of insects. I have recently discovered a great difference in their mental operations and capacities. Individuals there are which possess great intellectual superiority to the common laboring classes, which is manifested in the fact that they assume the leadership in all their important public works and army movements. Some are much more sagacious and cautious in avoiding traps and dangerous contrivances set for them by the scarcely superior human genus.

One of our Germans invented a very destructive ant trap. It is set over the entrance to their city, and is so contrived, that going or coming it is sure to entrap them; but not all of them. Occasionally a well formed fellow is observed to arrive at the top of the precipice, where he stops and gravely and cautiously surveys the awful abyss below, filled with frantic and terribly distressed thousands—who have incautiously precipitated themselves into inevitable ruin—and after viewing the dreadful and disastrous condition of his fellow laborers, he seems to understand the true nature of the misfortune, and turning from the irremediable calamity, hastens down the inclined plane into the grass weeds, beyond the reach of further observation.

Quite a number of them are seen to examine and hastily fly from the entrance of this destructive trap.

AZALEA VISCOSA, A FLY-CATCHER.

BY W. W. BAILEY.

THE many curious observations published of late in regard to vegetable fly-catchers have opened my eyes to such phenomena as are presented in my forest walks. As is well known to all botanists, our sweet swamp azalea (*Azalea viscosa*) has its corolla covered on the outside with innumerable clammy and glandular hairs. Each hair is a prolongation of the cuticle and is surmounted by a purple and globular gland. In the bud, these hairs appear to cover the whole surface of the flower, but when the corolla expands, they are seen to occupy the midrib of the